The Northwestern MILLER

MILLING PRODUCTION SECTION

Modern Machines for an Old Mill

★

By Paul L. Dittemore

Technical Editor
The Northwestern Miller

★

Modernization of the Star of the West Milling Co. plant at Frankenmuth, Mich., included installation of eight Allis-Chalmers double roll stands. The rolls are 7 in. by 30 in., and are driven by an electric motor.

The Star of the West Milling Co. has proved to its own satisfaction that replacement of old, worn-out machinery with new and more efficient machines pays dividends. The company's 750-sack plant at Frankenmuth, Mich., has the new look now. It has been completely re-equipped with new roll stands, new purifiers, new sifters, new grain-cleaning machinery, and a new coat of paint.

In the past 30 years—since 1920 or about—there have been several new mills built in the U.S. The only difference between the Star of the West mill and the other mills is this: The Star of the West plant is the only plant, to this writer's knowledge, that replaced an obsolete plant. The other mills built in this country in the past 30 years have been replacements for mills destroyed by fire, or plants added to increase the capacity of an existing plant or chain of plants.

Replacement of obsolete and inefficient machinery was not the only reason for rebuilding the Frankenmuth mill "from top to bottom," but it was the principal reason, according to Albert H. List, manager of the company. The old mill had a daily capacity of 300 sacks. The new mill's capacity is 750 sacks.

Mr. List explained the reason for the increase in capacity this way: The same crew which was required

(Continued on page 12a)

The three new Allis-Chalmers all-metal purifiers shown in the picture above replaced old-style wooden purifiers in the modernization program.

The Star of the West Milling Co. plant is housed in a three-story brick building constructed in 1911. The mill has 75,000 bu. of storage space.

Announcing

THE MERCK FREE LIBRARY OF RADIO TRANSCRIPTIONS

CELEBRATING THE *10TH Anniversary of Enrichment*

Dramatic shows and timely spots on ready-to-use transcriptions—specially prepared for the use of millers in their own advertising

Upper left: **MARGARET O'BRIEN**—Popular child actress who has swept to stardom.
Above: **FREDRIC MARCH**—Famous star of stage and screen.

Above: **DEBORAH KERR**—Star of Metro-Goldwyn-Mayer's *Quo Vadis.*
Right: **DANE CLARK**—Well-known motion-picture star.

It would be difficult to name four more popular guest stars to feature on your radio program than Margaret O'Brien—Fredric March—Deborah Kerr—Dane Clark. Usually, you would have to pay a high fee for their services. But the Merck Library of Radio Transcriptions on Enrichment brings them to you *without charge*, on a nonexclusive basis. This Library is exceptionally complete. It includes—on ready-to-use records—a 15-minute dramatic show—5-minute documentary segments—3-minute segments—and 20-second to 1-minute spots. In addition, it contains scripts on Enrichment for all types of live shows. No matter what kind of radio program you sponsor, you will find a wealth of material from which to choose.

FREE 12-PAGE BROCHURE GIVES FULL DETAILS

Our illustrated 12-page brochure *Cavalcade of Enrichment* describes every record in the Merck Library of Radio Transcriptions. It also contains practical suggestions on publicity, point-of-sale material, and other ways of enhancing the prestige of your company in connection with the 10th Anniversary of Enrichment.

THIS LIBRARY OF TRANSCRIPTIONS IS YOURS
Without Charge
WRITE TODAY FOR BROCHURE

Merck & Co., Inc. Dept. MP-7
Rahway, N. J.
Please send brochure *Cavalcade of Enrichment.*
COMPANY NAME.....
STREET.....
CITY..... ZONE.....
STATE.....
BY.....
TITLE.....

MERCK & CO., Inc.
Manufacturing Chemists
RAHWAY, NEW JERSEY
In Canada: MERCK & CO. Limited—Montreal

Employment Records for a Purpose

By A. L. Belcher
Industrial Relations Director
Pillsbury Mills, Inc.

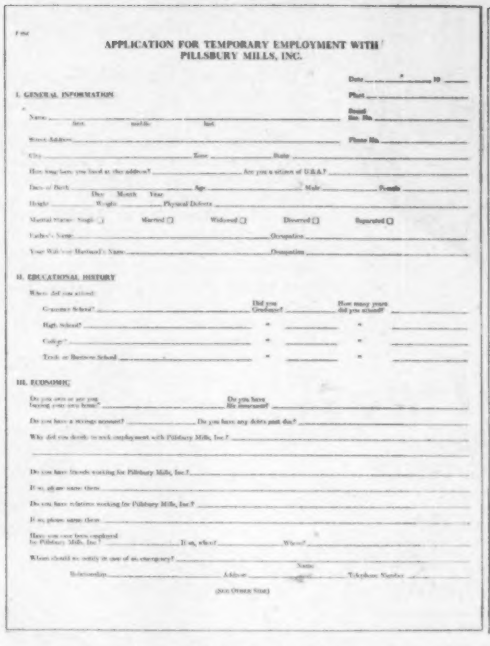
IT is reasonable to assume there is relatively little of Descartes' "methodic doubt" that employment records are a necessary expense today.

Without certain records one would be in violation of the Fair Labor Standards Act (Wage-Hour regulations), the social security requirements and other laws governing employment. Without other records, one would be seriously handicapped in developing an effective organization. There is much information needed if your company has a labor contract with a union since seniority provisions almost always are included in labor agreements.

The debatable question is, obviously, how elaborate a set of records does one need—not desire—and what are the most efficient records? Efficiency in this case is measured by the cost of preparation and the effectiveness of the record system.

Beginning in logical sequence with the application form (front and back shown in Figures 1 and 2), let us assume that all flour mill superintendents presently have application forms that are being used—but perhaps may stand some improvement.

If you are using an application form, is it serving its purpose to the fullest, or is it a first cousin of the too-much used questionnaire which asks too many questions that are not pertinent?



APPLICATION FOR TEMPORARY EMPLOYMENT WITH PILLSBURY MILLS, INC.

Date ____ 19 ____

I. GENERAL INFORMATION

Plant ____

Name ____ (last) (middle) (first)

Social Sec. No. ____

Street Address ____ Phone No. ____

City ____ State ____

How long have you lived at this address? ____ Are you a citizen of U.S.A.? ____

Date of Birth: Day Month Year ____ Age ____ Male ____ Female ____

Height ____ Weight ____ Physical Defects ____

Married Status: Single ☐ Married ☐ Widowed ☐ Divorced ☐ Separated ☐

Father's Name ____ Occupation ____

Your Wife's or Husband's Name ____ Occupation ____

II. EDUCATIONAL HISTORY

Where did you attend:

	Did you Graduate?	How many years did you attend?
Grammar School?		
High School?	"	"
College?	"	"
Trade or Business School	"	"

III. ECONOMIC

Do you own or are you buying your own home? ____ Do you have life insurance? ____

Do you have a savings account? ____ Do you have any debts past due? ____

Why did you decide to seek employment with Pillsbury Mills, Inc.? ____

Do you have friends working for Pillsbury Mills, Inc.? ____

If so, please name them ____

Do you have relatives working for Pillsbury Mills, Inc.? ____

If so, please name them ____

Have you ever been employed by Pillsbury Mills, Inc.? ____ If so, when? ____ Where? ____

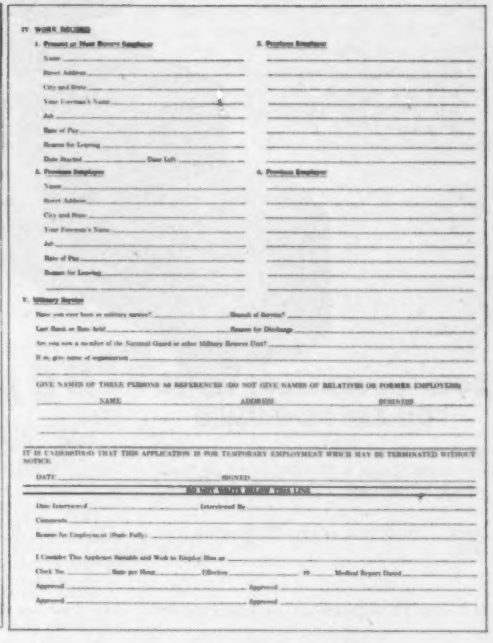
Whom should we notify in case of an emergency? ____

Name ____

Relationship ____ Address ____ Telephone Number ____

(See Other Side)

Front of Application Form



IV. WORK RECORD

1. Present or Most Recent Employer — 2. Previous Employer

Name ____ Name ____

Street Address ____ Street Address ____

City and State ____ City and State ____

Your Foreman's Name ____ Your Foreman's Name ____

Job ____ Job ____

Rate of Pay ____ Rate of Pay ____

Reason for Leaving ____ Reason for Leaving ____

Date Started ____ Date Left ____ Date Started ____ Date Left ____

3. Previous Employer — 4. Previous Employer

Name ____ Name ____

Street Address ____ Street Address ____

City and State ____ City and State ____

Your Foreman's Name ____ Your Foreman's Name ____

Job ____ Job ____

Rate of Pay ____ Rate of Pay ____

Reason for Leaving ____ Reason for Leaving ____

V. Military Service

How you ever been in military service? ____ Branch of Service? ____

Last Rank or Rate held ____ Reason for Discharge ____

Are you now a member of the National Guard or other Military Reserve Unit? ____

If so, give name of organization ____

GIVE NAMES OF THREE PERSONS AS REFERENCES (DO NOT GIVE NAMES OF RELATIVES OR FORMER EMPLOYERS)

NAME	ADDRESS	OCCUPATION

IT IS UNDERSTOOD THAT THIS APPLICATION IS FOR TEMPORARY EMPLOYMENT WHICH MAY BE TERMINATED WITHOUT NOTICE.

DATE ____ SIGNED ____

DO NOT WRITE BELOW THIS LINE

Date Interviewed ____ Interviewed By ____

Comments ____

Reason for Employment (State Fully) ____

I Consider This Applicant Suitable and Wish to Employ Him at ____

Clock No. ____ Rate per Hour ____ Effective ____ 19 ____ Medical Report Dated ____

Approved ____ Approved ____

Approved ____ Approved ____

Reverse of Application Form

Two Purposes for Use

An application form really has only two purposes: (1) to provide data required, including the applicant's name, address, social security number, and, (2) to supply some character insight of the applicant. Answers to any questions on the application which do not serve to supply the information indicated above are relatively valueless and can actually distract you from the principal goal.

No effort will be made here to outline in detail, or to explain the purpose of every point to be considered in an application form.

Keep Questions to Minimum

If you are planning to set up an application form, or want to evaluate the one you may now be using, you may want to consider the following as a guide:

First, determine the least amount of factual data necessary and organize the questions accordingly.

Next, consider the questions that reveal the character of the individual. You should be interested in finding out how stable or "steady" he is and questions dealing with home ownership, marital status, length of service with former employers, etc., are revealing. You will want to know how well prepared he may be for future advancement and his educational record and special studies of technical courses will be a guide to this factor.

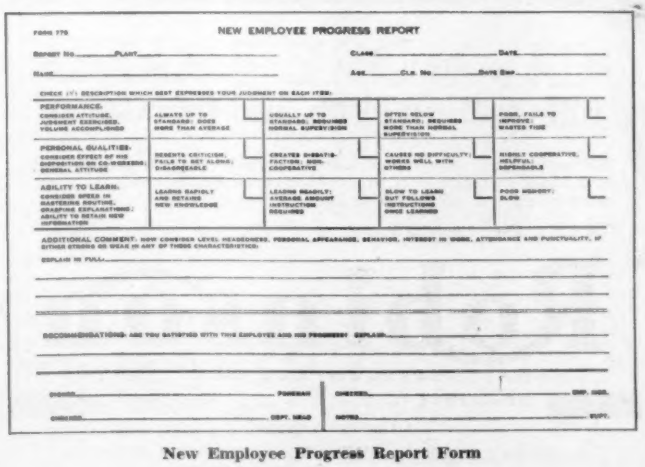
Former employers of the applicant are some of the best sources of information desired. The employers usually will be cooperative in describing their experiences with the applicant while he was in their service. Telephone calls or personal visits with former employers will produce by far the most satisfactory answers. Most personnel or plant managers are willing to discuss candidly an individual's performance. If you solicit this information by telephone, it is recommended that a simple mimeographed form be used as a guide to the conversation.

The form should list the following and after it is completed, it should be made a part of the person's record: Name, source of information, length of employment, reason he left job, quality of work, ability to get along with other workers, dependability, habits, state of health, and other comments.

It is not intended that such a form for recording information obtained in a telephone conversation should be used with the ceremonial observance of a bailiff swearing in a witness. The form should, however, serve as a guide to the conversation and should be a "check list" to make sure that all of the pertinent information be obtained.

If the applicant should list out-of-town companies or individuals as references in his application, you may want to use a printed form to obtain the required information. The form that my company uses lists the applicant's name and social security number at the top, with the following explanation:

"The person named above has applied for employment with this company and states that you are a former employer. As a part of our regular procedure, we would appreciate



Form 770 NEW EMPLOYEE PROGRESS REPORT

Report No. ____ Plant ____ Class ____ Date ____

Name ____ Age ____ Cl. No. ____ Date Emp. ____

CHECK (√) DESCRIPTION WHICH BEST EXPRESSES YOUR JUDGMENT ON EACH ITEM:

PERFORMANCE: CONSIDER ATTITUDE, JUDGMENT EXERCISED, VOLUME ACCOMPLISHED	ALWAYS UP TO STANDARD; DOES MORE THAN AVERAGE	USUALLY UP TO STANDARD; REQUIRED NORMAL SUPERVISION	OFTEN BELOW STANDARD; REQUIRED MORE THAN NORMAL SUPERVISION	POOR; FAILS TO IMPROVE; WASTES TIME
PERSONAL QUALITIES: CONSIDER EFFECT OF HIS DISPOSITION ON CO-WORKERS; GENERAL ATTITUDE	RESENTS CRITICISM; FAILS TO SEE ALONG; DISAGREEABLE	CREATES DISSATISFACTION; NON-COOPERATIVE	CAUSES NO DIFFICULTY; WORKS WELL WITH OTHERS	HIGHLY COOPERATIVE; HELPFUL; DISPENSABLE
ABILITY TO LEARN: CONSIDER SPEED IN MASTERING ROUTINE, GRASPING EXPLANATIONS; ABILITY TO RETAIN NEW INFORMATION	LEARNS RAPIDLY AND RETAINS NEW KNOWLEDGE	LEARNS READILY; AVERAGE AMOUNT INSTRUCTION REQUIRED	SLOW TO LEARN BUT FOLLOWS INSTRUCTIONS ONCE LEARNED	POOR MEMORY; SLOW

ADDITIONAL COMMENT: HOW CONSIDER LEVEL HEADEDNESS, PERSONAL APPEARANCE, BEHAVIOR, INTEREST IN WORK, ATTENDANCE AND PUNCTUALITY, IF EITHER STANDS OUT UNUSUALLY IN ANY OF THESE CHARACTERISTICS:

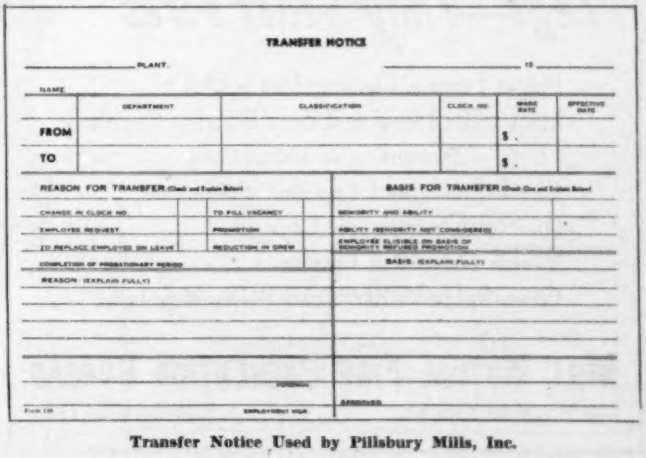
EXPLAIN IN FULL: ____

RECOMMENDATIONS: ARE YOU SATISFIED WITH THIS EMPLOYEE AND HIS PROGRESS? EXPLAIN: ____

SIGNED ____ FOREMAN CHECKED ____ DEP. HEAD

CHECKED ____ DEPT. HEAD NOTED ____ SUPT.

New Employee Progress Report Form



TRANSFER NOTICE

____ PLANT. ____ 19 ____

NAME ____

	DEPARTMENT	CLASSIFICATION	CLOCK NO.	WAGE RATE	EFFECTIVE DATE
FROM				$.	
TO				$.	

REASON FOR TRANSFER (Check and Explain Below)

CHANGE IN CLOCK NO.	TO FILL VACANCY	
EMPLOYEE REQUEST	PROMOTION	
TO REPLACE EMPLOYEE ON LEAVE	REDUCTION IN FORCE	
COMPLETION OF PROBATIONARY PERIOD		

REASON: (EXPLAIN FULLY)

BASIS FOR TRANSFER (Check One and Explain Below)

SENIORITY AND ABILITY	
ABILITY (SENIORITY NOT CONSIDERED)	
EMPLOYEE ELIGIBLE ON BASIS OF SENIORITY BUT LACKS PROMOTION	

BASIS: (EXPLAIN FULLY)

FOREMAN

Form 139 EMPLOYMENT MGR. APPROVED

Transfer Notice Used by Pillsbury Mills, Inc.

WE HAVE NO INTENTION OF BEING "Nosey"

Or anything of the sort, but we would like to ask you a few questions. May we?

DOES THE MOISTURE TESTER YOU ARE NOW USING

Give accurate direct moisture percentage readings on a dial instantly, on tempered wheat and other mill products?	THE UNIVERSAL MOISTURE TESTER DOES, and consistently.
Does it require a separate temperature test?	THE UNIVERSAL requires NO separate temperature tests; a built-in thermometer automatically indicates temperature.
Get out of adjustment of calibration?	THE UNIVERSAL CAN'T get out of adjustment of calibration. It is self checking.
Does it have to be returned to factory for replacements or repairs?	THE UNIVERSAL involves no maintenance expense. Does not have to be returned to the factory.
Is it guaranteed for THREE years?	THE UNIVERSAL is fully guaranteed in writing for THREE years.

Now, for two final questions. May we send you literature fully describing the Universal Moister Tester? Better still, may we send you a Universal Tester for a ten-day FREE trial?

BURROWS EQUIPMENT COMPANY

1316-MP SHERMAN AVE. EVANSTON, ILL.

receiving from you certain information regarding the applicant. This information will be kept in strict confidence.

"We have tried to prepare the following questions in such a way as to require the least amount of your time and yet give us the pertinent data. We hope you will answer as many of the questions as possible and return this form to us in the enclosed stamped and addressed envelope.

"If we can assist you in a similar way at any time, please do not hesitate to call on us."

The form then lists substantially the same questions that are used on the telephone inquiry form.

Medical Examination Record

Many companies today require that the applicant pass a pre-employment medical examination. In this case it is usually advisable to provide the examining physician with a form to record the information obtained during the examination. The information on the medical examination report may be helpful at a later time in the event of a questionable claim for workmen's compensation.

Reports may be detailed or brief, depending upon the extent of the physical examination required. The form used by our company is similar to those used by insurance companies.

When a new man is put on your company's payroll, it is obviously important that his progress be observed. We believe it is wise to obtain the recommendations from his immediate supervisor as to his possibilities of becoming a satisfactory employee.

In order that his file may be complete and permanent, we use a form, "New Employee Progress Report."

Progress Report Useful

This report is filled in by the man's foreman and approved by the superintendent, or plant manager. Usually we have two such reports prepared on each new employee, one being prepared after the man has been on the job for two weeks, and the second at the end of his first month of service. This gives us an opportunity to review his progress and work record prior to the end of the probationary period as provided in many of the company's agreements with the unions. The New Employee Progress Report form used is shown in Figure 3.

If your company's operations are sufficiently large to warrant record-

The sure sign of perfection

CANMORE BRAND
Silk Bolting Cloth and Grit Gauze

The accuracy of the weave of Canmore Brand Silk Bolting Cloth and Grit Gauze is the proof of its outstanding quality. It is woven to one standard only—perfection, to ensure complete efficiency and hard wear.

AS DEPENDABLE AS IT IS BRITISH

Robinson

THOMAS ROBINSON AND SON LIMITED
ROCHDALE . . . . . ENGLAND

LONDON OFFICE
AFRICA HOUSE KINGSWAY LONDON, W.C. 2

Don't Neglect Elevator Legs—They Start Fires

Never Force a Choke—Dig it Out.
Inspect the Head and Boot Bearings Regularly, According to Instructions.
Check Pulley and Cup Belt Alignment.
Do Not Operate Idle Legs.
Watch Drive Belt Tension.
Clean Space Under Head Pulley Regularly.

MILL MUTUAL FIRE PREVENTION BUREAU
400 W. Madison St. CHICAGO, ILL.

ing the transfers from one job to another, you may find it an advantage to have a simple form prepared, showing the job to which the man was transferred as well as the job from which he was transferred. The form should include the date, change in job title, etc. The form used by our company (see Fig. 4) shows the reason for the transfer and other pertinent information. Often these transfer records prove valuable in reviewing departmental or job seniority of individuals.

Misunderstandings are the source of so many grievances that care should be taken to eliminate them. This frequently can be done by simply putting understandings in writing. We have in mind such actions as the granting of leaves of absence for a given period of time, reprimands, instances of an employee not desiring to accept promotion, etc. In order that the possibility of misunderstandings may be reduced to a minimum, we have a series of confirming letters on several subjects. Before going further, let us stress that we do not use a mimeographed form letter for confirming understandings. Rather, letters have been drafted which are used as guides for writing the personal letters to the individuals.

Put It in Writing

We have letters confirming refusal to accept promotion, confirming the granting of leaves of absence and the length of such leaves, and confirming reprimands with a statement as to the employee's actions which prompted the reprimand. In addition to these, we use a standard letter confirming dismissals which sets forth the reason for the discharge—and another letter used for confirming the resignation of an employee. Copies of all such letters are filed in the employee's personnel folder, a separate file being maintained for each employee. These files provide permanent records to which we may easily refer at any time.

Another form which we are sure is important is the termination report. This serves as a notice to the payroll department to remove an employee from the payroll. More importantly, it serves to record pertinent information about the employee in the event he seeks reemployment, or in case an inquiry is received from another company regarding the individual.

Another form that may be necessary, depending upon the size of the company and the number of employees, is a service record with space to show seniority on the various jobs, reprimands, terminations, reemployment, etc. It is, in effect, a summary sheet for quick reference. A form authorizing deduction for savings bonds, group insurance premiums, and annuity premiums may also be considered.

It has been our belief for many years that (a) most of us do not learn enough about the applicants considered for employment, and (b) that adequate employment information has not been maintained in the past in order to minimize grievances and misunderstandings. With the employment records outlined, we feel progress has been made in the Pillsbury organization toward providing the data required.

SUPERIOR CARBIDE TOOLS
For All Roll Corrugating
Economical Increased Output
CORRALLOY TOOL CO.
Minneapolis 7, Minn.

Milling's Golden Era

Summary of 25 Years of Progress

By W. D. Gray

IN closing this brief historical sketch of the history of milling in this country for the last 25 years, it seems to me that we who have been closely identified with these great improvements may well be excused if we feel a little proud of the progress made, and the results obtained. For there has been more progress made within this period than in the 100 years preceding. In fact, the improvements have been so great and so general that it has amounted to a revolution in the manufacture of flour. There is hardly one thing in a modern flour mill in common with the mill of 25 years ago. The historic millstone that was considered by all millers of former days as being the life and heart of the mill has given way to rolls, an entirely new creation.

If we were to single out any one thing as being the greatest of all the improvements in milling, we would probably select the rolls as the thing that the modern mill of today could least afford to give up. After the rolls would come the purifier, as the next greatest improve-

"AERO* LIQUID HCN, FUMIGANT
plays a big part in my pest control program"

Every mill operator who calls in an Industrial Fumigation Engineer to apply AERO LIQUID HCN, Fumigant can look forward to having a *pest-free* mill within a matter of hours. That's because nothing escapes when LIQUID HCN goes to work. Insects, insect eggs and rodents are destroyed regardless of the inaccessibility of their hiding places.

Moreover, after proper aeration, LIQUID HCN does not affect the baking qualities of flour, and leaves no taste or odor.

Write us for the name of an Industrial Fumigation Engineer serving your locality if you do not know of one.

Other Cyanamid Products for Effective Pest Control

CYANOGAS® G-FUMIGANT...kills insects and insect eggs in stored grain.

CYANOGAS A-DUST...destroys rodents outdoors.

Write for fully descriptive literature

**Trade-mark*

AMERICAN Cyanamid COMPANY
Agricultural Chemicals Division
30-U ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

BRANCH OFFICES: 20 No. Wacker Drive, Chicago 6, Ill.—P. O. Box 808, Winchester, Va.—Brewster, Fla.—1308 Donaghey Bldg., Little Rock, Ark.—111 Sutter St., San Francisco 4, Calif.

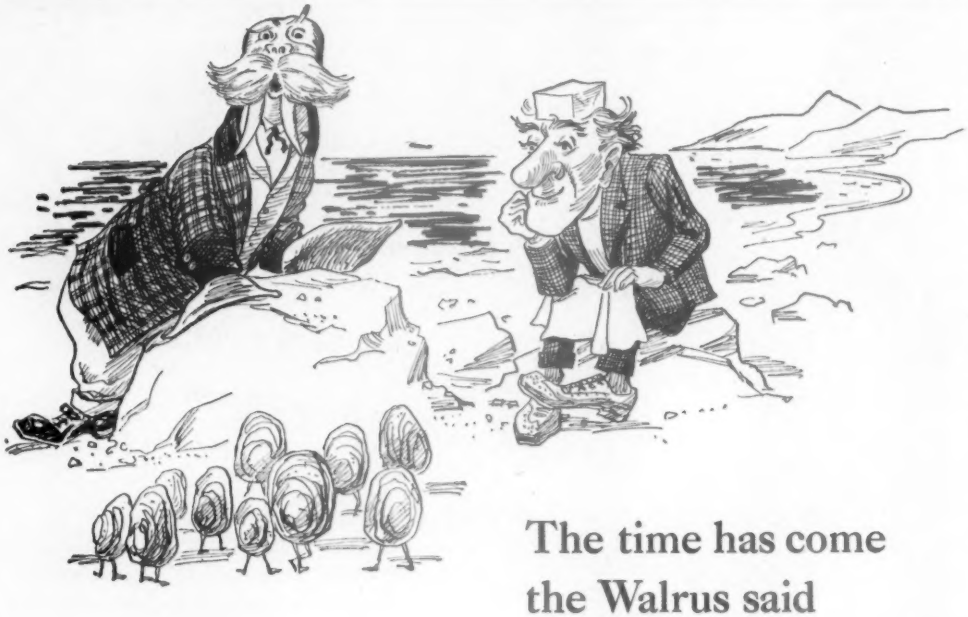
ment in modern milling. This machine was also a new creation; a thing before unknown in milling. This imported machine, unlike the rolls, displaced no other machine, but was rather an addition to the mill, and the one thing that gave us a certain percentage of higher grade or "patent" flour. It made it possible to handle a grade of stock called "middlings" or "shorts" that used to go to a lower grade of flour than that made by the first grinding of the wheat on the millstone. The grade that the purifier made was so much higher that it often commanded a price of from $1 to $3 per barrel more than the flour made by grinding the wheat on the millstone. Having learned to treat this stock on the purifier, it became important to make it of a better quality, by higher grinding. The rolls were induced, therefore, to make as much of it as possible, and thus made the purifier more efficient; so that by the one helping the other, and working in complete harmony, they produced results never before obtained. If we were compelled to drop out one of these indispensable machines, it would very readily be decided by any jury of experts that the purifier, love it as we may, would have to be sacrificed.

The next great improvement was the modern flour dresser and the centrifugal, which displaced the time-honored, old hexagonal reel. These machines cannot be called new creations, but rather worthy sons of a worthy sire, the old hexagonal reel. It will be admitted by nearly all good millers that better work can be done by our present flour dresser than by the old reel, because of the fact that the stock has not to travel so far in the reel itself or in the conveyors under the reel; hence there is less dust flour made by attraction. But probably the greatest improvement in connection with them was in their small size, so that they can be placed to better advantage in connection with the other machinery; enabling the milling engineer to plan a mill and make it mechanically more perfect than it was possible to do by the use of the old long reels. This in itself counts for a great deal, and no one knows it as well as the milling engineer who is continually planning mills. This, with the fact that they require very much less power to drive them, all tends to make them a great and radical improvement. To these three machines, taken together, therefore, belong, principally, the honor of the great revolution in milling.

The use of these three machines has created many other new demands, but all have contributed to make the perfect whole as we have it today. They have caused us to make a long and elaborate system of separation as compared with the old system of milling (the separations were so few and simple as to hardly deserve the name of a system), but we have learned in the school of experience that it pays to follow the line of separations just as far as we are able to improve them, and no further.

We might well ask ourselves, What will be the next great change in milling machinery? None can answer; but it seems as though both millers and milling engineers might well ask for a rest. This cannot be; for it is inconsistent with the human mind. We must keep moving, and if we move, we believe our intelligence will guide us in the direction of improvements, rather than the reverse. While we cannot tell what next will be done, we can speculate as to what is likely. Being permitted to so speculate, I would say that there is nothing in sight in the near future which is likely to displace the rolls. All grinding in the mill, from the first breaking of the wheat to the last reduction of the low-grade stock, I believe, will continue to be done by the rolls for a long time. We may expect from time to time that other machines will be brought forward to do some portion of this work, as they have been heretofore, but it is doubtful if any substitute will ever do the work as well as the old millstone which the rolls have displaced. So, I think, we are destined to have the roller mill with us for a long time.

For the sieve purifier, it is hard to conceive of anything better for the work that it was intended to do, than this machine. It has many good points to recommend it, besides having passed through the fire and come out unsinged. Scores of air purifiers, or aspirators, have been showered around it, and still it is on top, and will not be buried. Some good millers, after listening too long to the



The time has come
the Walrus said
To talk of many things
of Ships and Planes...Production Pains
and everything it brings

"EVERYTHING," in the national emergency, can include whatever you make and ship. Overnight it might mean changes in type of design of your containers.

So the Union Multiwall Specialist (the Walrus, if you like) is ready to help you meet any such problem.

When you invite a Union Multiwall specialist to study your packaging, there's no obligation of any kind. But now, more than ever, you'll find his packaging engineering know-how valuable to you.

Better be safe . . . better be sure . . . better welcome the Union representative when he calls!

UNION Multiwall Bags

UNION BAG & PAPER CORPORATION

233 BROADWAY, NEW YORK 7, NEW YORK

Offices in: CHICAGO, ILL. • MINNEAPOLIS, MINN. • KANSAS CITY, MO. • HOUSTON, TEXAS • BALTIMORE, MD. • ATLANTA, GA.

TRADE MARK UNION

Elevator Legging Brush

Complete Line of

MILL BRUSHES

MADE RIGHT
PRICED RIGHT

Universal Brush Mfg. Co.

LOU MUNDO
1407 W. Pershing Road
CHICAGO 9, ILLINOIS

BLUEPRINT

For FINER MILLING PRODUCTS

Apply STERWIN Research to Your Production Problems

For Better Flour Enrichment

VEXTRA M

U. S. Pat. No. 2,444,218

- Enriches flour, macaroni products, corn meal and grits to Government Standards, easily and economically. All nutrients are supplied in accurately controlled pre-mixed form.
- Minimum increase of ash content—the original combination of starch base carriers.
- Stability of vitamins is assured by VextraM's pH control.
- Free flowing—uniform feeding—excellent dispersion.
- Uniform, finer particle size of ingredients and carriers provides more uniform flour enrichment.

For Better Flour Bleaching

Oxylite®

ECONOMY–bleaches flour to any desired degree of whiteness at low cost.

UNIFORMITY–of particle size, benzoyl peroxide content and bleaching action of each particle results in uniform flour whiteness.

QUICKER BLEACHING–faster color removal allows closer manufacturing control.

EFFICIENCY–due to unique manufacturing process (U. S. Patent No. 2,460,439).

NO SPECIAL EQUIPMENT NECESSARY–can be used in your present dry feeding equipment.

Write for Free Copies
24 page Booklet

FLOUR ENRICHMENT HANDBOOK FOR MILLERS

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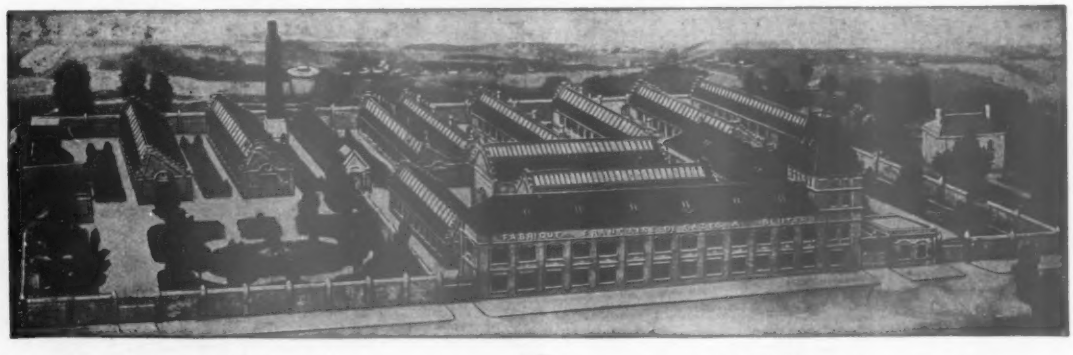
affable machinery agent who had an air purifier to sell, have been carried away by his eloquence, thrown out their sieve purifiers, and put in the air machine, only to find that the work was not so good as it was before. After losing some trade and much money, they have been compelled to go to the scrap pile and dig out the old sieve machines, and put them back. Some few may have retained the air purifiers, still trying to persuade themselves that they are doing as good or better work than they were before. But it is safe to say that their fortunes would be improved by replacing the air purifiers with a good line of sieve machines. The sieve purifier has been improved and no doubt will continue to be improved, but it seems reasonable to predict that all modern American mills will find room for good sieve purifiers for many years to come.

The same might be said of our centrifugal reel. There is a place for it, and, as far as we can now see, there always will be. And yet, while this is true, the machine often occupies a position in a mill where a milder bolter would do the work better. There are not many places in a mill where it is necessary to have this machine, but in these few places it will do the work better than anything we have had, or are likely to have in the near future. It should not be used on any except soft or low-grade stock, and stock that cannot be abused by harsh treatment. Any stock that is sharp enough to be bolted on a mild bolting machine should not be sent to a centrifugal. The flour and all results will be better, if the system is right, by sending it instead to a good flour dresser. I write this knowing full well that it is in direct opposition to the English system of milling. Nevertheless, this is my opinion, based on large experience. It is well settled in my mind that we shall long continue to use, to a limited extent, a well-constructed centrifugal reel. When I say centrifugal reel I mean all differential reels; as they are more or less centrifugals.

I must confess that so much cannot be said of the flour-dresser, or reel, including all bolting reels, either round or hexagonal; for it seems to me that the handwriting is already on the wall, that they must go. As the round reel has displaced the hexagonal, so the sieve bolter will as surely displace all other reels. This change is now, and has been for some time, going on, quietly but surely; and while most of the flour today is being made on reels, there are very few if any new mills being built with reels, but are putting in some kind of a sieve bolter.

A man contemplating building a large mill today, would be very lax in his duty if he did not fully investigate the various types of sieve bolters before he fully decided on his bolting system. In making the investigation he should take heed to the principle of the sieve bolter as compared with the reels, and of one sieve bolter compared with another. He may find a reel mill doing better work than a sieve bolter mill, and it may or may not be the sieve bolter's fault. It may be the particular kind of a sieve bolter, or the rolls, or the system, or many other things; or it may be the miller.

If, on the other hand, he finds a sieve bolter mill doing better work than the reel mill, the sieve bolter may or may not deserve credit. The principle of a well-constructed sieve bolter is no doubt better than the



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principle of bolting in our best-constructed flour-dresser. In the flour-dresser the stock takes a rolling and tumbling action, causing a continual mixing of the pure and impure stock, and making considerable flour dust by attraction. These facts cannot be got away from in the best reel that has ever been constructed. If you should select a sieve bolter that treats the stock as harshly, and if anything in or about the machine will cause a scouring or mixing of the stock, then you have made a selection worse than the reel, as your results will be no better, and a sieve machine of any kind requires more skill and care in the mill than the reel does. But if you are going to get the full benefit of the sieve bolter, you must have a machine in which the action of the stock is such that the motion of the sieve causes the impurities to rise on top and bring the clean stock next to the silk, with nothing to disturb, hinder or to mix it. When this principle is adhered to, the results must be good, and the separations clean and perfect; and I would advise you to put in no machine unless you are satisfied that this is the action of the stock.

Too many are apt to think that a sieve machine is all that is necessary, and choose by the price, or, in other words, take the cheapest; but, as the general thing, the cheapest usually proves to be the dearest in the end. The miller must use as good judgment in the choice of this class of machines as he would in rolls or purifiers, for there are now, and will continue to be, all kinds of these machines on the market. But they will do better work than the reels, and have come to stay, and the best of their type will survive and take first place in the best mills. The others will find their place; some of them, no doubt, in the small country mills, and many of them in the scrap pile. This will be the result, no matter what you may say, or what I may write.

But some of us wonder and ask what progress will be made in the next 25 years. Will there be as much done, and as many changes, as in the last 25 years? It is hardly to be expected that the changes can be so radical, but there is still much room for improvement, and the work that we have started must go on. Men are becoming more intelligent, and it must not be supposed that improvement in milling is going to stop. Since the business of the world is moving much faster than it was 25 years ago, it will not be strange if great progress is made in the future. But one thing we are sure of—many of us will not be here to see the end.

——BREAD IS THE STAFF OF LIFE——

Relationship of Roll Pressure to Flour Quality

CHICAGO—The effects of roll pressure upon flour granulation, flour quality and power requirements was reported by Prof. A. B. Ward, department of milling industry, Kansas State College, at the recent convention of the Association of Operative Millers.

The work was made possible by funds granted to the Department of Milling Industry by the International Milling Co. and through the generosity of the various manufacturers contributing equipment for this study. These include the Statimeter Corp., The Essmueller Co., Wallace & Tiernan, Inc., and other staff members of Kansas State College. The study was carried out using a third middlings stock milled from hard red winter wheat at the Shellabarger Milling Co. in Salina, Kansas. This hard red winter third middlings stock was ground on a 7 in. by 14 in. roll at a constant rate of 3 lb. a minute. Pressures were measured by means of Statimeters installed on the tension rods of the roll stand. The fast roll speed was maintained at approximately 510 r.p.m. with a differential of 1½ to 1, and smooth rolls were used for grinding the stock. Roll pressures expressed as lb. an inch of roll surface were varied from 13 to 102 lb. an inch of roll surface, and observations were made on extraction through an 11XX flour silk, horsepower, particle size distribution of the flour, absorption, gassing power, valorimeter and baking test.

Extraction increased up to an optimum point and then as roll pressures an inch of roll surface increased the extraction through the 11XX flour silk actually declined. Horsepower increased in direct proportion to roll pressures an inch of roll surface as did absorption and gassing power. At roll pressures beyond the optimum point there was a decrease in particle size distribution of the flour produced from these middlings. No significant differences were observed in the valorimeter and baking test on samples derived from different roll pressures.

One striking and very unexpected result of the study was the decrease in ash of the flour produced as the roll pressure went up. On 0.55% ash stock the ash of the flour continually declined until at the peak roll pressure the flour produced was about 0.37% ash. A less startling but nevertheless definite decline in protein of the flour was noticed as roll pressures increased.

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Keeping faith with nature

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Tips for Shop Men

How to Do Sheet Metal Soldering

From a Tinsmith

SINCE a maintenance man is expected to be able to tackle about everything in the way of repairs around a mill, it is not unlikely that from time to time a soldering or brazing job may come his way. The experienced sheet-metal man will probably smile if he reads this article, and murmur, "Old stuff!—I knew that years ago." However, everyone isn't an experienced tinsmith. It is, of course, impossible to give examples of all the jobs of this nature which may turn up, but a general knowledge of the "how" and "why" of these operations will help lead to a solution of the more tricky problems. There's generally a "way out" somewhere.

Soldering may be defined as the "method of uniting by heat two metal surfaces by means of an alloy of lower melting point than either of them, and usually of lower strength."

Soldering, as commonly known, involves the use of an alloy based on tin, lead, silver, copper or zinc, or any combination of them. Soft soldering usually employs a bit made of copper to direct the flow of molten metal where required; and the solder usually has a melting point of between 350 and 500° F. Hard soldering uses an alloy of copper, zinc and possibly silver which melts at a much higher temperature. Here a blowpipe or torch is practically essential; the parts to be joined being firmly clamped, wired or riveted together and the work united at a red heat under the torch flame. Brazing is generally similar to hard-soldering, except that a low-melting brass alloy is used, this being known as spelter. Most average work is done by self soldering; hard soldering and brazing are usually resorted to when the joint must withstand considerable heat as well as strain. The contacts on electrical "make-and-break" relays on automatic motor starters, for instance, are generally brazed or hard soldered. (If the contacts are made of tungsten, brazing must be used, because tungsten cannot be soldered.)

There are certain conditions which must be fulfilled to obtain a good soldered or brazed joint:

(1) The surfaces to be joined must be cleaned, and of sufficient contact area. (2) They must be kept so during the time they are being united. (3) If a soldering bit is used, it must be of suitable shape, size and balance, and must have its working faces clean, smooth and well tinned. (4) If a torch or blowpipe is used, the flame must be so adjusted that it does not smoke up or oxidize the surfaces or the solder. (5) The work must not be allowed to shift as to relative positions of edges or surfaces until the joint has set properly. (6) The heat must be reasonably suited to the job. (7) The right kind of solder or spelter and the right flux must be used.

Fulfill these conditions and, with a little ingenuity, an astonishing number of such jobs can be carried out.

The edges or surfaces to be joined must be clean. It is perfectly useless to try to get solder to unite with dirty, rusty or corroded metal, because it has no affinity for these. The job may appear perfect on the surface, but if it is torn apart or opened up it will be found to be merely "stuck together." A "stuck" job shows plainly that the workman did not have any real grasp of the "how" and "why" of his job. Even on new, bright-tinned material it is safer to clean somewhat, because there is almost always a slight trace of oxide. On rusty or corroded metal scraping, filing or even cleaning acid should be used to make sure that the surface is really clean before proceeding. Perhaps I may seem to emphasize this cleaning matter unduly, but lack of it is responsible for more bad joints than almost anything else, no matter how good the subsequent operations may be.

The next point is to see that the contact area is sufficient. In cases where real strength is not an important factor, as where sheets of well-supported galvanized iron are to be joined edge to edge on a roof, the edges may be butted closely to-

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Carolus Linnaeus

1707-1778

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gether and the solder run between and over them. But if strength is important, it must be remembered that the strength of the solder itself is practically always less than of the parts united. Thus, on sheet metal, seaming or overlapping should be resorted to in order to make a strong job.

As soon as the joint is heated, oxide will form unless prevented. For this reason a flux is used to protect the hot surface from the air during the operation. The essential features of a flux are that it will melt and flow readily into the joint, protect the hot metal, and wash out any oxide which may be present. It must not, moreover, be driven off in vapor or burnt at the soldering heat, but must adhere closely to the metal so as to form a blanket. It must also be lighter than the solder itself, so that the latter can flow after it into every corner of the joint, displace it, and unite the surfaces properly and intimately.

The best known of the chemically inert or noncorrosive fluxes is rosin. Another type of flux is that having a cleaning action in addition to the blanketing effect, such as "killed spirits," some soldering pastes, etc. A third class possesses the additional property of actually reconverting the oxide, if present, into metal again. This last type is useful on somewhat dirty or rusty metal—though, when all is said, it is better to make a clean preparatory job instead of trusting to a more or less corrosive flux to do the job for you.

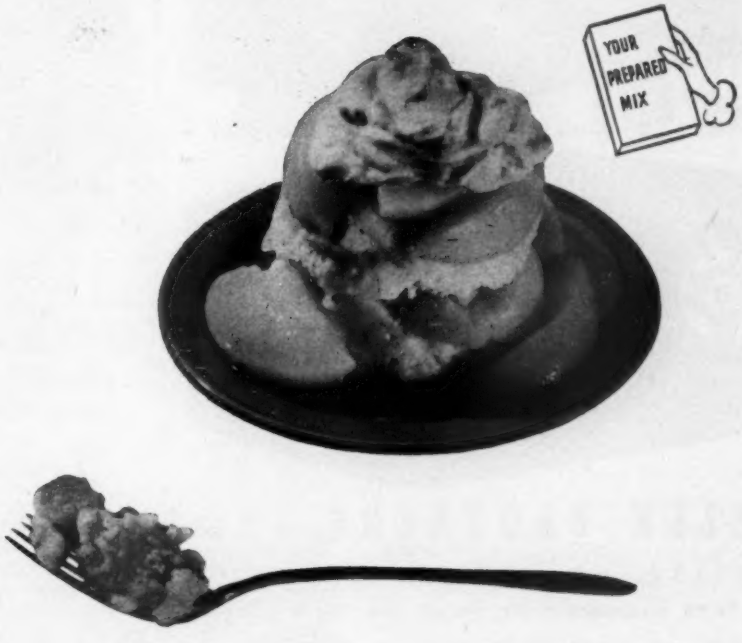
"Killed spirits" produced by dissolving in an 80 or 90% solution of hydrochloric (or, as it is often called, "muriatic") acid, as much zinc as it will take up, is most often used for average work, although rosin or an equivalent noncorrosive material will give equally good results as a rule, with a little more care. There is, however, one important exception to the uses of fluxes of an oxide-dissolving nature. Corrosive fluxes may not be used in the joining of wires in electric circuits. The fire insurance and power companies' regulations absolutely forbid it. No matter how carefully the joint in a wire may be washed and wiped off—and in a lot of cases it might not get wiped off at all—there is always the risk that months after it is taped up and replaced in the conduit the corrosion would continue until one day it would fail to carry the current effectively. Overheating and a fire might then easily result, for, since the fuse on the circuit would naturally be based on the full carrying capacity of the wire, it would not necessarily melt in time to avoid disaster.

I use the term "soldering bits" instead of "soldering iron" because a bit is never made of iron, but of copper. It is perfectly possible to do a good job with the kitchen poker if this is clean and well-tinned; but copper is capable of transmitting its heat rapidly to the work; it is easy to tin, because tin and copper have a natural affinity; it is readily cleaned up with a file; and, contrary to general opinion, it can be quite promptly forged into suitable shapes provided it is not overheated or struck too heavily with a hammer. As to size of head, the bit must be large enough to hold sufficient heat to melt the solder thoroughly and to keep it melted for a reasonable time. When, as is usual, two bits are used alternately, they must be of about the same mass of copper so that the smaller one does not get overheated while the larger one is in use. Various shapes of heads are used. The tool should be balanced as far as possible so that it is easy to work with. A heavy bit on a long handle is a most awkward and fatiguing thing to use for any length of time.

Electrically heated bits are particularly handy for small work, because they are less likely to become overheated. Also, since they supply their own heat, they can be somewhat smaller for the same heat output capacity and can be handled on ladders and other places where changing bits for reheating would waste time. Where there is a fire or explosion risk, they avoid the dan-

(Continued on page 15a)

AOM SNAPSHOT — This journal's cameraman caught the picture above on the run during the recent meeting of the Association of Operative Millers in Chicago. The lens victims are C. H. Broaded, director of industrial relations for the Fisher Flouring Mills Co., Seattle, and Donald S. Eber, executive secretary of the association. Mr. Broaded appeared on the program at the annual meeting.



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Monsanto Sodium Acid Pyrophosphate is derived from Monsanto-produced elemental phosphorus of better than 99.9% purity. Strict production and laboratory control guard quality in every step of manufacturing this leavening agent. It is easy to blend in any standard mixing equipment.

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For detailed information of the use of Monsanto Sodium Acid Pyrophosphate for shortcake, doughnuts, cakes, biscuits, gingerbread or muffins, contact the nearest Monsanto Sales Office or write MONSANTO CHEMICAL COMPANY, Phosphate Division, 1700 South Second Street, St. Louis 4, Missouri.

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New Machines for an Old Mill

(Continued from page 1a)

to operate the 300-sack plant could operate a 750-sack plant. The company had an established market for the additional output. The unit cost of production, therefore, would be reduced significantly. That reasoning does not involve higher mathematics. The 2 plus 2 brand of arithmetic is plenty.

So, the officers of the company concluded that it would be good business to replace the worn-out machines in the mill with new machines, and while they were about it, increase the capacity of the plant by 450 sacks a day without adding a penny to the labor cost of production. Other costs of production, such as power, were increased but not by as much as the capacity was increased for the rea-

The millwright who fashioned the spout suspension boards above the sifters obeyed his artistic urge when he cut the hangers.

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Albert H. List, manager of the Star of the West Milling Co. plant, pictured at his desk in the mill office.

son that the new equipment required less power per sack of flour produced than the old machines used.

The old equipment which was torn out of the plant to make way for the new included a number of stands of Nordyke & Marmon 7 by 18-inch rolls, reels, purifiers and sifters. That equipment was installed in 1911 when the building was erected.

Early last year the company's officers began negotiations with the Allis-Chalmers Mfg. Co. for the new machinery. It is interesting to note that the negotiations were started by Otto Rummel, whose father managed the original mill, and Howard L. Beebe, whose father was a superintendent of millwrights during the construction of the original mill.

The discussions were interrupted by the sudden death of Mr. Rummel in February, 1950, and were resumed upon the appointment of Mr. List as superintendent and manager. The deal for the new equipment was closed in June at a special meeting of the stockholders. They were convinced of the soundness of the replacement of the machinery and increase in the capacity of the plant.

Dismantling the old machinery was done last November and the new mill was started up last March. The millwrighting was done by a crew from the Buffalo, N.Y., office of Allis-Chalmers and was supervised by Ralph B. Thewlies.

The new machinery includes the following: Eight double stands of A-C 9 by 30-inch roller mills, three A-C all-metal purifiers, two six-section, 17 high A-C sifters, one four-section by 17-high sifter, an A-C low-head rebolt sifter; an S. Howes Co., Inc., "in-suspension" wheat scourer, a Hart-Carter disc separator and a new receiving separator.

The dust collecting equipment that was used with the old machinery was retained. No new equipment was added to the packing department.

Two Additional Elevators

When the capacity of the plant was increased from 300 to 750 sacks a day, it was necessary to install only two additional elevator legs to take care of the added load. The capacity of the existing elevators was increased by putting in high-capacity cups.

All of the elevator legs and spouting is made of wood. There are two horizontal conveyors and these are made of steel with drop bottoms for easy cleaning. All spouting, elevator legs, and the walls and ceilings in the mill are painted white.

Two electric motors supply the power to drive the mill. One motor pulls the roll line and the second motor drives the grain-cleaning machines, elevators, sifters, packers, etc.

Practically all of the flour is packed in multiwalls on the conventional tubular type packer. The packing crew consists of two men, one who packs millfeeds. All the millfeeds are sold to farmers in the immediate vicinity of Frankenmuth.

The company operates a 30-ton custom grinding plant in connection with the mill and is able to prepare formula feeds to its customers' specifications.

The only type of wheat milled by the Star of the West Milling Co. is Michigan white wheat for the production of cake, cracker and cookie flours. The mill does not maintain

New sifters installed in the Star of the West Milling Co. plant include two 6-section and one 4-section Allis-Chalmers free-swinging sifters. The two large sifters are shown in the picture above.

It's important to treat dead stock accumulations with Dowfume EB-15

for machinery or spot fumigation

Fumigating a dust trunk with Dowfume EB-15. Note: Operator has gas mask readily available.

One so-called "dead" spot may be alive with insects breeding in even small accumulations of stock. Re-infestation of your whole milling system can start here!

Fumigation with Dowfume EB-15 is an efficient method of eliminating insects in their breeding places, such as in dead stock in milling machinery and flour handling equipment capable of retaining fumigant vapors for reasonable lengths of time.

When properly applied, Dowfume EB-15 can remain effective from 30 to 60 days. Its long-lasting residual effect lies in the slow evaporation of this low-volatility fumigant. Treatments are suggested at monthly intervals or as needed. It is important to use spot fumigation between general space fumigations.

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its own products control laboratory, but depends upon Mid-West Laboratories, Inc., Columbus, Ohio, for its control and analytical service.

All of the wheat is purchased from country elevator companies in central Michigan and is trucked in, since Frankenmuth is not on a railroad line. The mill output similarly is handled by truck. The nearest railroad station is about five miles from Frankenmuth.

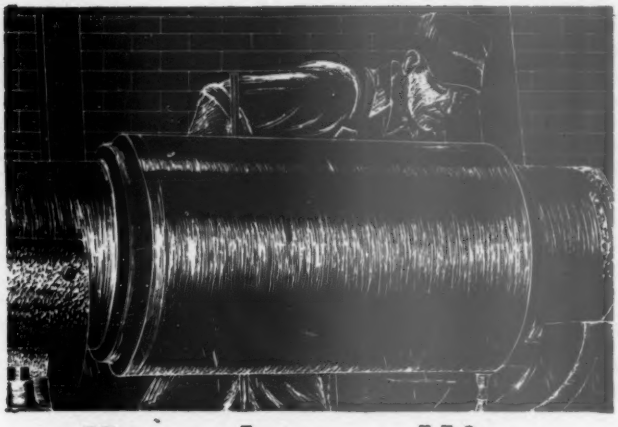
Original Mill Built in 1870

The original mill at Frankenmuth was built in 1870 by J. M. Hubinger and its capacity was 30 bbl. In 1903 the company was organized and John G. Hubinger, Sr., was its first president. The present corporate name was adopted in 1903. In 1911 the company put up the present building, which is three stories high and is of brick construction. Additional grain storage was built in 1938 and the mill now has a total storage capacity of 75,000 bu.

Jacob Rummel, who was superintendent at the time the mill was built in 1911, continued in that capacity until 1947 when he was succeeded by his son Otto.

Mr. List was appointed manager of the mill in April, 1950, having previously been employed by Jonathan Hale & Son at Ionia, Mich.

He got his start in milling in 1909 when he got a job as flour packer at the Saginaw (Mich.) Milling Co. In 1914 he was made head miller at the



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warns of its presence in a way nobody can ignore • Kills egg life and larvae as well as adult insects • Destroys rodents without carcass nuisance No other fumigant exceeds LARVACIDE in toxicity in gas form to mill insect life.

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The Chatfield & Woods Sack Co.
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PROMPT ACCURATE LABORATORY SERVICE
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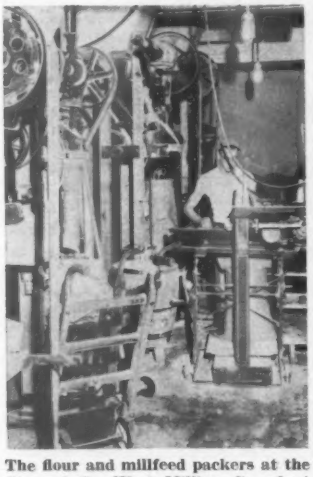
John Bergdolt, head miller at the Star of the West Milling Co. plant.



The flour and millfeed packers at the Star of the West Milling Co. plant were not replaced in the modernization program. Shown above is the line of four packers.

300-bbl. Saginaw plant and continued with that company until 1931 when it went out of business.

Mr. List then went with the Jonathan Hale firm at Ionia and remained there until last year when he joined the Frankenmuth company as manager and superintendent. He has a young man, Richard Krafft, as an assistant manager. Mr. Krafft attends to much of the business details, correspondence, etc.

Mr. List recently served a term as chairman of District 6 of the Association of Operative Millers and continues to be active in the affairs of the association.

Soldering

(Continued from page 11a)

ger of an open flame. But they have limitations. Since for safety's sake the heating coils must be so designed that they will not get the bit dangerously overheated if left unused with the current on, and since the copper gives up its heat faster than generated when soldering is actually in progress, it is not practical to do heavy soldering work with too light a bit, even though it may be electrically heated. This is true unless either auxiliary heating of the work with a torch is provided or intervals of rest are allowed. The larger bits, however, using from 250 to 350 watts, can work fast and hold their heat well. An electric bit demands reasonable care. It cannot be thrown around or dipped completely in acid for long without going "haywire." Personally, I prefer an electric bit for most jobs.

Having first trued up the working face or faces of the soldering bit so that they are bright and smooth, proceed to tin it. The object of doing this is twofold. First, the molten solder can more easily "wet" the copper so that the flow may be readily directed where it is wanted. Secondly, since the molten solder adhering to the bit forms a flexible heat connection to the work, the heat is transmitted at maximum speed. Tinning is usually accomplished by rubbing the heated bit on a lump of sal ammoniac and then applying solder to its surface. The sal ammoniac blankets and floats off the thin layer of oxide which the heat has formed on the copper, and the solder flows evenly over the fluxed portion. If sal ammoniac is not handy, killed spirits or even rosin may be used for tinnnig—although admitted-

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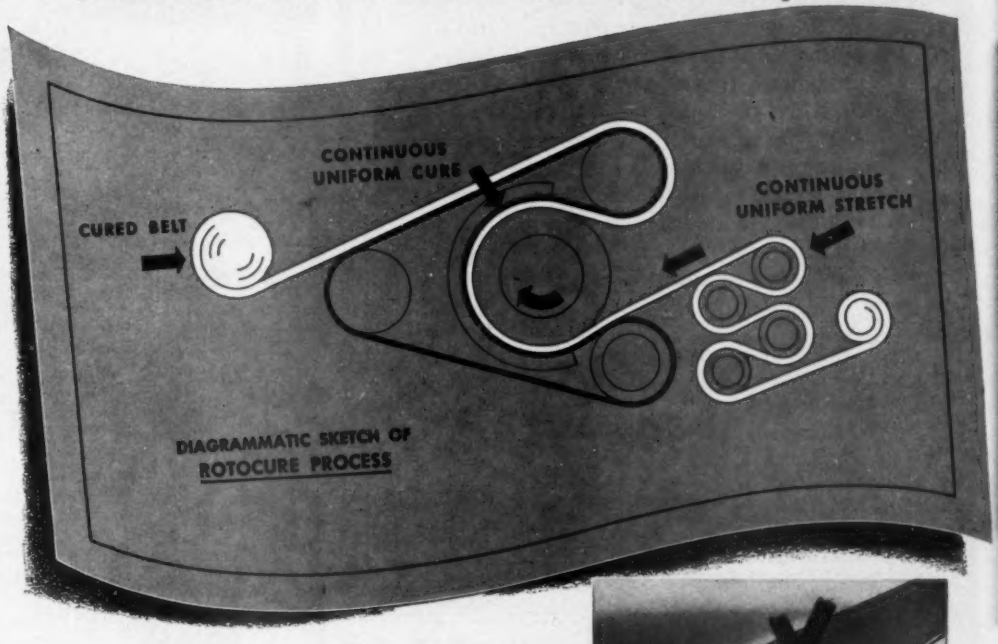

*Overcured Sections — present every 30' to 40' in all belts made by the flat press method. Only Rotocuring (*continuous, non-stop* curing) eliminates this major cause of belt failure.

Place a hot flatiron too often on the same spot of a pair of pants and you weaken the fabric. Use conventional flat press methods of curing belting and *you weaken the structure similarly.* Flat press curing cannot help but result in these overcured segments because these sections (2″ to 4″ long across the belt width) get a double "treatment" as previously cured areas advance *less than a full press length.*

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WICHITA KANSAS

ly rosin (having no cleansing action) is somewhat harder to work with. But it is preferable if an electrical job is to be done, as there is then no risk whatever of the joint being contaminated with corrosive material when the bit is applied.

A first-class tinning device can be made from an ordinary brick. Turn the brick with its hollowed side upwards and place in this hollow some crystals of sal ammoniac. To clean or tin the bit, rub it while hot in the hollow. The sal ammoniac with which it comes in contact will blanket the working faces, and the friction of the brick itself will help to clean off the oxide without unduly wearing the face out of shape. A similar device may be used for soldering paste or rosin.

INCREASE SHOWN IN SALES OF FEED IN SOUTH DAKOTA

PIERRE, S.D. — Sales of feed in South Dakota in 1950 totaled 147,208 tons, according to a report by the South Dakota State Department of Agriculture.

This represents an increase of 16,084 tons over the 1949 volume of 131,124 tons.

In 1948, sales of feed in South Dakota were reported at 107,192 tons.

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GRAND RAPIDS, MICH.—Michigan Bakeries, Inc., has named the Karl G. Behr Advertising Agency, Detroit, to handle its promotional work.

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By means of its electronically amplified needle, Signa-flo quickly earns back its low cost in the processing of cereals and grains, and handling of any powdered, granulated or crystalline materials. Of particular importance to food processors enriching their products with vitamin or mineral supplements is Signa-flo's protection against faulty mixing. Strict uniformity of product and elimination of delays caused by "choke-ups" alone, make the automatic guardianship of Signa-flo a *must* today.

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Corn Steepwater Good "Field" for Research Chemist

TO the chemist, corn steepwater is of almost endless interest. When you take several thousand bushels of corn kernels and soak them in warm water for 30 hours or so, the water you draw off is loaded with things potentially useful to man. Get rid of most of the water, by evaporation, and you have a thick syrupy substance that is commercial corn steepwater—chiefly soluble proteins and minerals of corn, and a veritable happy hunting ground for the inquisitive chemist and researcher.

Some of the things steepwater has already done, such as boosting the yield of penicillin and supplying valuable protein to corn gluten feed, have been cited in this and other issues.

A newer derivative of steepwater, and one which already has specific uses in mecidine, is inositol, a sugar substance and member of the B-complex group of vitamins. Inositol has always been abundant in nature, existing in animal and plant tissues. Cereal grains, particularly, are good sources. Its existence has been known for a century, since Scherer discovered it in 1850, isolating it from animal muscle tissue and naming it from the Greek word "inos," meaning muscle. But only in recent years has it been extracted on a commercial scale from its surrounding materials (this time not animal muscle, but corn) and made available to mankind.

In appearance, inositol in pure form is a white, crystalline, odorless, water-soluble compound. Its current use is almost entirely medical. Various industrial applications are contemplated and to some extent have been tested, including such widely divergent things as the explosive for blasting caps and the bases of certain plastics. But the consumer of inositol, so far, gets it chiefly inside of capsules.

Synthetic Inositol

The estimated human requirement of inositol—one gram or more per day—is easily supplied by a good mixed diet furnishing 2,500 calories, and the average man on an average diet is getting that much inositol in his daily food. It is believed possible that man can synthesize inositol in the liver or elsewhere, says a bulletin published by the Chemical Sales Division of Corn Products Sales Company. That possibility, together with the fact that inositol is contained in many foods, makes it highly improbable that a deficiency of inositol will disturb the average healthy human on a good diet.

But all people are not average and healthy, and those with certain ailments have been benefited by this newly available derivative of corn steepwater. Inositol can be administered alone, as a lipotropic agent, or in combination with such substances as methionine, choline, vitamin B_{12} and vitamin E.

Lipotropic agents are substances capable of reducing abnormal accumulations of fat. Experimental rats, on special diets designed to produce abnormal amounts of fatty acid in their livers, have had these deposits reduced by inositol feeding. Dr. M. J. Thomas and Wayne Stewart of the A. E. Staley Mfg. Co., writing in a recent issue of the Staley Journal, say that inositol "has been used with good results in the treatment of liver cirrhosis with dropsy of the abdomen due to a low-protein and high-alcohol intake. . . . Because of its lipotropic action, inositol is being administered experimentally to patients with arteriosclerosis (hardening of the arteries), peripheral vascular disease, coronary artery disease, and liver abnormalities associated with fatty infiltration. . . . It has been reported that inositol has been administered clinically for periods up to 60 days without any evidence of toxicity."—From "Corn."

Dielectric Heating Has Possibilities for Grain Drying

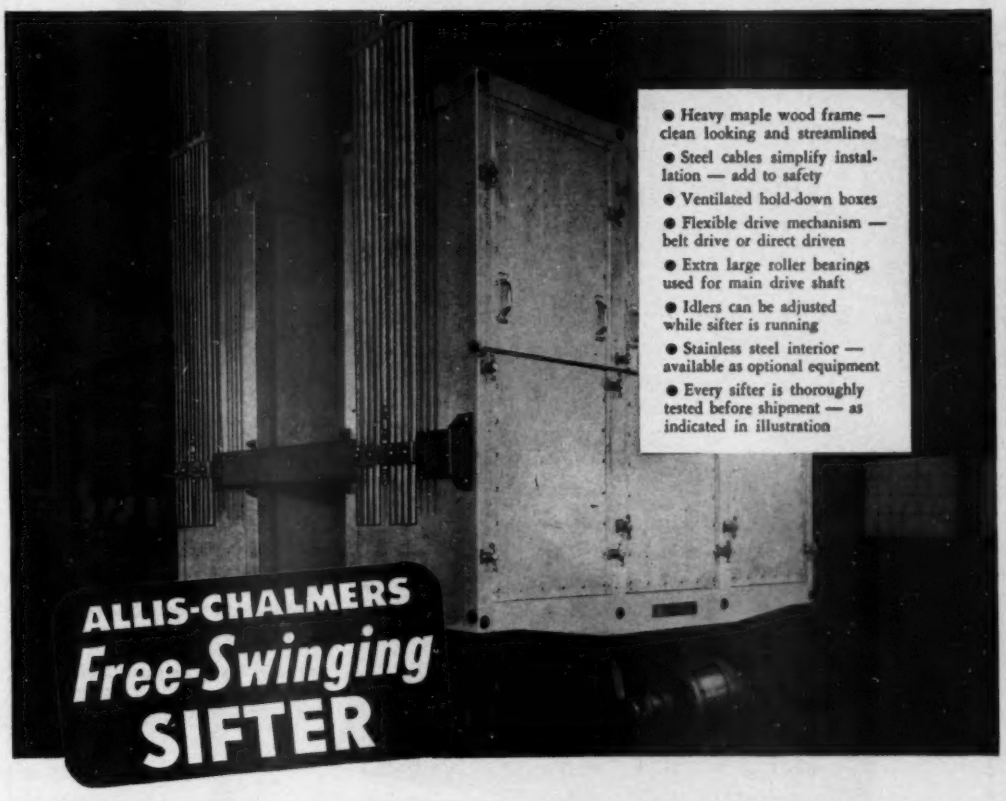
A RESEARCH engineer of the U.S. Department of Agriculture believes that radio frequency — dielectric — heating may eventually be useful in drying grain to safe storage moisture content.

The engineer, Finis T. Wratten, believes that dielectric heating also has further possibilities in its effect on bacteria, mold spores, insects and enzymes, all present-day storage problems.

Dielectric heating results when radio frequency energy, provided through a heating circuit, is changed to heat energy in each kernel of grain. As the radio waves oscillate in the grain to be dried, they create friction in the molecules of the grain, which results in heating.

The advantage of this type of drying or conditioning over ordinary forced-air drying is that heating is more uniform throughout each kernel, rather than just on the surface, he points out. Thus, moisture is

BOUGHT ONE...TRIED IT...then Ordered 15 More!



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MANY OUTSTANDING FEATURES

Modern from top to bottom—inside and out — this streamlined Allis-Chalmers sifter has many features designed for improved functional operation. The ventilated hold-down box is arranged for air suction attachment — providing ventilation through sieve channels on hot, moist products. Box lining can be stainless steel or wood, as preferred. Sieves are Nordyke type of wood construction, screw assembled for quick and easy maintenance. Other outstanding features are listed above.

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forced from the grain to be carried away by forced air currents, rather than to be drawn from it as in ordinary drying with forced hot air.

Mr. Wratten, in a report before a recent meeting of the American Society of Agricultural Engineers, described research in drying rice in cooperation with the Louisiana Agricultural Experiment Station.

He found that staisfactory dielectric drying depended on both temperature and humidity. For example, when the relative humidity of air being forced through the drying grain was less than 50%, temperature of the rice had to be kept under 100° F. to prevent damage to its milling quality. When the forced air had a relative humidity between 50 and 70%, temperatures had to be kept below 105° F.

The past years' results have indicated, too, he said, that short periods of drying with dielectric, followed by a day or longer conditioning period of grain held in storage, produced the best rice drying rates. Specifically, 10-minute applications of heat produced greater drying than longer heating periods, regardless of the length of conditioning-storage time following heating; and a 24-hour conditioning period produced greater drying rates than shorter conditioning periods, regardless of the length of heat applications.

In all experiments, heat from 100 to 120° F. was provided through a heating circuit carrying an electric frequency of 27 megacycles.

Mr. Wratten also reported on the work of a fellow USDA engineer, Leo Soderholm, who is testing the effect of radio frequency in drying alfalfa hay, corn, and wheat in cooperation with the Nebraska Agricultural Experiment Station. Dielectric drying of alfalfa hay from 80% moisture content to safe storage content was achieved at a fast rate, but the use of this type of drying would be limited by the cost of drying, being practical only if speed of drying were important.

Carotene content of the dielectric dried hay was higher initially than normally dried hay, but loss of carotene after six months seemed to be about the same. With shelled corn, kernel temperatures above 110° F. generally damaged germination. One livestock feeding test showed the dielectric drying of corn had little effect on feed quality.

Experiments with wheat indicated that moisture could be removed at a fairly fast rate (from 14 to 4% moisture in 1 minute) but the temperature was damaging to germination and baking and milling properties.

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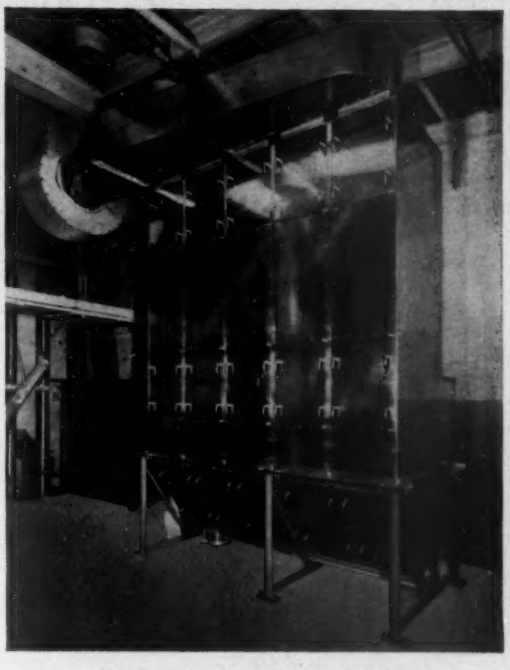

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No method could be simpler or more effective that the Carter disc for length separation. Undercut pockets pick up the grain that are designed to handle and reject all *longer* material. Also, for the separation of weed seeds from grain, small pockets pick up the weed seeds which are *shorter* than the grain being handled. No foreign material or grain of more (or less, as the case may be) than the desired length can remain in the disc pockets as they rise during operation. Different types of discs are applied for each kind of grain being cleaned.

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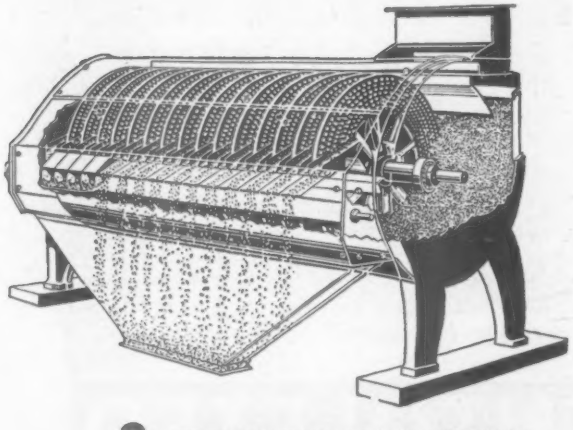

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